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SCIENCE NEWS LETTER

Vol. 50, No. 10

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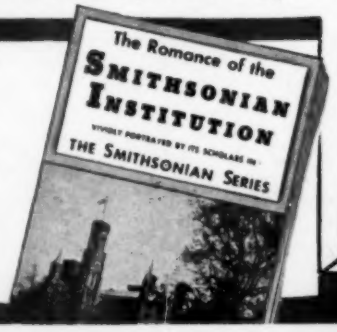

PSYCHOLOGY

Race Haters Unbalanced

Persons showing extreme prejudice against another race are nearing mental imbalance. Such feelings denote personal insecurity and conservatism.

➤ PEOPLE who demonstrate extreme racial prejudice are teetering on the brink of mental imbalance.

This was the essence of what Dr. Else Frenkel-Brunswik, University of California psychologist, told the American Psychological Association meeting in Philadelphia in a report on a study of the personality of racially prejudiced persons.

"The racially prejudiced are insecure, though externally they may exhibit confidence and even arrogance," Dr. Frenkel-Brunswik said. "They accuse racial groups of aggression, underlying weakness, preoccupation with sex, etc.

"Actually these are the things which the prejudiced find in themselves, but are unable to face in themselves. Therefore, they project these unpleasantries to others, usually a racial group. It is a mechanism for blaming others for one's own shortcomings. Thus the expression of racial prejudice is used by some to maintain a mental balance which might be lost if these problems could not be projected to others."

Dr. Frenkel-Brunswik's study, sponsored by the American Jewish Committee, is based on the results of questionnaires and accepted psychological tests, such as the Rorschach method. Results reported at the meeting came from the study of 140 college women subjects. She said that the character of the extremely prejudiced in this group hold for as yet unreported results of studies of business men, normal and mentally ill persons, law-abiding citizens, and inmates of a prison.

The personality traits Dr. Frenkel-Brunswik described hold true in their entirety, she explained, only for those who score among the 25% highest on the prejudice test. She indicated that the 25% least prejudiced also exhibit abnormal personality traits, but said that data had not yet been compiled on this phase of the study.

Dr. Frenkel-Brunswik stated that persons who exhibit prejudice against one racial group are prejudiced against all racial groups but their own. She said they have less creative imagination, less insight and capacity for "putting oneself in another's shoes," lack emotional responsiveness, have less capacity for abstract thinking, and are unable to accept new ideas.

On the basis of the scores they are also characterized by "authoritarian submission and aggression, superstition, conventionality, in-group and family loyalty, anti-intellectualism, anti-emotionalism, and general repression of instincts, vilification of human nature, and a punitive attitude toward people who differ socially.

"A 'fascistic type' conservatism goes hand in hand with prejudice," Dr. Frenkel-Brunswik said. "This type of conservatism advocates taking the law into one's own hands, and using force to return to a mode of life long since a matter of history. This type of conservatism must be distinguished from the true conservatism of American democratic traditions, where extreme prejudice is not often found."

The psychologist said it is interesting to note that inmates of San Quentin prison, all of whom have committed some act of aggression against society, rate high on prejudice. She added that this fits in with the rest of the pattern of the prejudiced personality.

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EXPLOSIVES

Mining Made Easier With Shaped Charges

➤ BAZOOKA-STYLE blasting charges, with hollow noses, promise higher efficiency, lower costs and greater safety in hard-rock mining. This is indicated by results of experimental work conducted at the property of the National Tunnel and Mines Company, Tooele, Utah.

Bazooka projectiles exploding outside the armor of tanks pierced it with penetrating tongues of "hard" flame leaping out of conical hollows cut into the forward ends of their explosive charges. W. T. Warren, general superintendent of the company, decided that the same principle would be worth a try on rock, as it might eliminate a good deal of laborious drilling, or the use of excessively large powder charges plastered on the outside with mud.

He was joined by a former Navy officer, E. O. McAlister, who had wartime experience with underwater demolitions, and is now in charge of the continuing experiments.

The most efficient charge for mining purposes, it was discovered, is a block of ordinary blasting explosive with a hemispherical cavity in the face to be set against the rock. A little space, or "stand-off distance," between charge and rock improves efficiency.

Preliminary results, largely on big boulders on the floor and hanging rock "fingers" overhead, have been highly encouraging. Only a fraction of the labor formerly required for placing the charge is now necessary, and the same demolition effects can be obtained with less than half the powder.

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Agricultural experts estimate that one farm *rat* eats $2 worth of grain per year and destroys an additional $20 worth.

Continuous *flooding* of a rice field, from before or just after seeding until near harvesting time, controls weeds; they cannot get their first leaves into the air, although the rice can.

U. S. Army Air Forces Photo

MAN FROM MARS?—No, an Army Air Forces air crew member in the new pressure suit that will enable airmen to live while flying as high as 62,000 feet. Flying at this altitude without such a suit has previously been impossible for airmen.

AERONAUTICS

Great Circle Route

War developed aircraft equipment makes northern ocean routes usable, enabling transports to fly from New York to Chungking via the Arctic.

➤ THE "GREAT CIRCLE" route from Seattle to Tokyo, which Army transports will fly on scheduled trips, is but one of several Arctic or near-Arctic routes that will be followed in the future by both commercial and military planes. Distance-saving is the reason; war-developed aircraft equipment makes these northern trans-oceanic flights possible.

The announced Army short route to Japan skims the south-central bulge of the Aleutian islands that stretch from Alaska mainland to Siberian Kamchatka peninsula. Between Seattle and Tokyo planes will make one stop, at Adak, a halfway point. This route is a little more than 4,700 miles, while the present regular route from California to Japan by way of Hawaii and Guam is nearly 8,000 miles.

From New York to Tokyo, following the Great Circle route, planes would travel about 6,700 miles, and would pass over northern Alaska, eastern Siberia and Kamchatka, and the Kurile islands. From Chicago planes would cross Alaska at about the central college city of Fairbanks.

Transatlantic planes now follow Great Circle routes, or nearly so, in some instances. These are the planes that cross Labrador, and pass just south of Greenland and Iceland. From New York to Moscow by this path, the distance is roughly 4,700 miles, approximately 1,000 miles less than by way of Spain.

Great Circle routes from important American centers to certain Asiatic cities pass close to the North Pole. The route from New York to Chungking, the war capital of China, is one, for example. To reach one of these two cities from the other by air, planes would pass close to the Pole, would travel approximately 7,600 miles as compared with between 11,000 and 12,000 miles via Hawaii. Also from California to Tehran, the capital of Iran, aircraft would cross the Pole, but the air distance is only some 7,400 miles.

The cold weather encountered on these "top-of-the-world" routes no longer is a serious handicap to airplane traffic because of wartime developments. Included are de-icers to keep wings and body free of ice, static dischargers to eliminate troublesome electric charges, accurate altimeters, radar equipment, and loran, by which planes may know their geographical positions at all times.

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MEDICINE

Malaria from Transfusion

Blood of a malaria carrier given in transfusion can cause the disease. Two rules are given to avoid transmission of malaria by this method.

➤ THE DANGER of getting malaria from a blood transfusion has become a real possibility with the return from overseas of sailors and soldiers and a host of non-combatant men and women who were exposed to the disease, two Mayo Clinic physicians warn.

The case of a man who had never been in a malarial region and who developed malaria in December when the temperature was below zero, when it was most unlikely he could have got it in the usual way from a mosquito bite, is reported by Dr. Gerald H. Teasley.

The man had been injured in an automobile accident while away from home and was given three blood transfusions. One of the donors, it was found, was a soldier who had served in the Pacific area for 13 months, taking atabrine daily during that time.

The soldier did not have malaria while overseas, but after his return when he stopped taking atabrine he had five or six attacks. The hospital personnel who examined his blood when he served as a donor did not ask any questions about malaria. A thin smear of his blood taken after the patient developed malaria showed no malaria germs.

A blood smear with no malaria germs, however, is not proof that a person is free from the parasites, Dr. Teasley points out. No diagnostic test is known which will definitely rule out malaria in a carrier who has been free of symptoms for a long time.

Putting quinine into stored blood at a strength of one to one thousand will not prevent the occurrence of malaria after transfusion, and some scientists have reported that the malarial parasites can live for weeks in blood stored at almost freezing temperature.

Two rules that may help to avoid transmission of malaria by transfusion

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are given by Dr. Thomas B. Magath. These are: "1. If the prospective donor has been in a malarial area and has had an attack of malaria, he should not be used as a donor for at least two years after leaving the zone, provided he discontinued suppressive treatment (atabrine or quinine) then and has not had any recurrences of malaria for at least two years previous to his donation. Before donation a thick smear of blood should be examined and found to be negative.

"2. If the prospective donor has been in a malarial area and has not had any attack of malaria and for the past year has not taken any suppressive treatment, he may be used as a donor, provided a thick smear of blood does not reveal any parasites. The history of undiagnosed fever or a questionable history should cause the application of rule 1."

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METALLURGY

U. S. Makes Manganese

An electrolytic method developed by the Bureau of Mines may enable steel industry to make its own manganese, eliminating need for imports.

➤ ANOTHER lesson of the war is that America can produce its own manganese, a number-one essential in making steel. However, it cannot do it yet at a cost low enough to compete with ore from foreign countries. A low-cost method would mean independence from importation.

An electrolytic method, developed by the U. S. Bureau of Mines, details of which have been released recently, may be the answer. During the three years that its Boulder City plant has been in operation, it has produced over a million pounds of electrolytic manganese. This is only a small part of the requirements, however.

Despite the fact that the United States has large deposits of manganese ore, nearly all the manganese requirements of the steel industry before the war were imported, the Bureau states, because most of the domestic ores are low-grade and have proved difficult, and in some instances impossible, to concentrate to ferro-grade by ore-dressing methods.

The Bureau feels, however, that it has successfully demonstrated the technical and commercial feasibility of electrolysis in beneficiating low-grade manganese ores, particularly where the raw materials and electricity are available. It has just issued a publication reporting the process.

For every ton of steel produced in the United States, an average of over 13 pounds of manganese is used. Most of it is in the form of ferromanganese. During 1940, nearly 45,000 tons of manganese were produced in the United States, but over 1,400,000 tons were imported. In 1944, domestic production was five times as great as in 1940, and importation had decreased slightly.

In the production of ferromanganese, and other usable manganese compounds, America does better. The home production is about four times the imports. Imports of both manganese ore and ferromanganese come in normal times from Brazil, Chile, Cuba and Mexico, in the Western Hemisphere, and from Africa, India and Russia. The Soviet Union occupies a favorable position in steel production because it has, in the Ukraine, iron ore, manganese, limestone and coal all relatively close to each other.

In the steel industry in the United States, open-hearth operations are the greatest users of manganese. The manganese is added to the open-hearth melt as an alloying agent to increase tensile strength, and to remove surplus oxygen and sulfur. Manganese in pig iron is desirable in removing sulfur.

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INVENTION

Automatic Phonograph Holds Records Upright

➤ AN AUTOMATIC phonograph that holds records up edgewise while it plays them, instead of laying them flat, is the unique invention on which U. S. patent 2,406,355 has been awarded to Joseph A. Darwin of East Orange, N. J., and Robert Robertson of Kearny, N. J.

Instead of one tone arm this instrument has two, with oppositely placed needles. First the record is turned in one direction while the left side is being played, then the direction is reversed, the right-hand needle is set in the playing groove until that side is finished. Then both tone arms are disengaged, and at the same time the pivot-bearing arms that have held and rotated the record release it and move on to pick up the next.

The records stand on edge with separating sheets between them, more or less like the long-familiar record volumes; the automatic selecting mechanism flips them open at the desired spot and stands up the record to be played so that the mechanism can engage it. If no particular selection is indicated by pushing buttons, the machine will play one record after another all down the row, then start back and play them all again in reverse order. It can, however, be stopped at any point.

It looks as if juke-boxes equipped with this mechanism ought to rake in the nickels faster than ever, since less time is required for changing records. By the same token home-concert enthusiasts bent on a solid evening of Beethoven will find the program flowing more smoothly and with fewer interruptions filled with the noises of clicking machinery.

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GENERAL SCIENCE

Judges Named for Science Writing Award

➤ SEVEN JUDGES for the first annual George Westinghouse Science Writing Award, sponsored by the American Association for the Advancement of Science, have been announced by Dr. Willard L. Valentine, chairman of the awards managing committee and editor of the journal *Science*.

The judges are: Dr. Morris Meister, director of the National Science Teachers Association and principal of the Bronx High School of Science, New York, chairman; Wilbur Forrest, assistant editor of the New York Herald-Tribune and president of the American Society of Newspaper Editors; W. S. Gilmore, editor-in-chief of the Detroit News; Dr. James B. Conant, president of Harvard University and president of the AAAS; Anton J. Carlson, professor emeritus in physiology, University of Chicago; Miss Sally Butler, Indianapolis, Ind., president of the National Federation of Business and Professional Women's Clubs; and Senator Elbert D. Thomas of Utah.

The $1,000 award winner for the best newspaper science story of the year will be announced late in December.

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ENGINEERING

Streamlined Luxury Liners

➤ OCEAN LINERS are going supermodern. Luxury liners will be long, narrow and sleek, truly streamlined. They will have little of the familiar upper structures of smoke stacks, lookout towers, masts, bridges and radio antenna. They will be larger and faster than any ever built in this country.

These vessels, already designed with working drawings and specifications prepared for shipbuilders, will be as unique in appearance as some of the aircraft under flight tests and automobiles promised for 1950. Though stripped of familiar markings, they have beauty and dignity.

Two such vessels are designed by the U. S. Maritime Commission for duty on the Pacific; others are intended for South American and Mediterranean routes. Bids for the construction of these two have already been called for. They will be known as Great Circle Liners, and will be speedy enough to travel from the West Coast to Tokyo in eight days.

These liners will be 920 feet long, with a deadweight tonnage of 12,500, and will be able to cut through the open sea at 30 knots. Each will accommodate 1,238 passengers, and will be manned by a crew of about 500 persons.

The weather deck surface is one of the striking features of these ships. It is not a single surface as in aircraft carriers, but has three elevations, each smaller than the one below. This permits both open and covered promenades. The upper, centrally-located sun deck extends for more than half the length of the boat and has a fully equipped theater, as well as a circular play spot with band stand, dance floor, lounge and bar. The view of the ocean from it is unobstructed in every direction.

Aluminum in large quantities is specifid in the construction of these vessels. Almost all the superstructure, starting from a point one-third aft of the bow, will be built of this light metal. This gives stability, permits a beam of only 86 feet, and enables the vessel to make greater speed with less horsepower than ever obtained before in ocean liners. Both vessels will be powered by burning oil.

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PHARMACOCHEMISTRY

Better Skin Ointments With Penicillin May Come

➤ BETTER penicillin ointment for skin conditions such as impetigo and for burns may be coming as a result of studies reported at the meeting in Pittsburgh of the American Pharmaceutical Association.

Use of some of the newer wetting agents, familiar in soapless shampoos, made the most satisfactory ointments of many tested, M. L. Neuroth, Glenn L. Jenkins and C. O. Lee of Purdue University School of Pharmacy found.

The tests, made with a new method devised in the Purdue laboratories, were for determining how long the penicillin remained active in the various bases.

Addition of small amounts of sodium citrate and urea helps to keep the penicillin in the ointment active against germs, the scientists also found.

Sinus sufferers and nose specialists will welcome the finding that adding ephedrine sulfate to penicillin solutions causes only slight loss of penicillin stability. These studies, by Victor P. Seeberg, Doris Jane Brown and Fredrick J. Johnson of the Cutter Laboratories, Berkeley, Calif., were made following reports of treatment of sphenoethmoiditis with penicillin applied locally, together with spraying of a substance such as ephedrine for constricting blood vessels.

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ZOOLOGY

Giraffe Born at National Zoological Park

See Front Cover

➤ BIRTH of a new giraffe at the National Zoological Park in Washington, D. C., on Aug. 23 was announced by Dr. William H. Mann, director. The baby, which is a female, was about four feet tall and weighed a little less than 100 pounds at birth, has been named Twiga, which is the word for giraffe in the Swahili language. The mother's name is Spring Song, and the father's is Nageoma.

The picture on the front cover of this SCIENCE NEWS LETTER is of Twiga and her mother the day after she was born.

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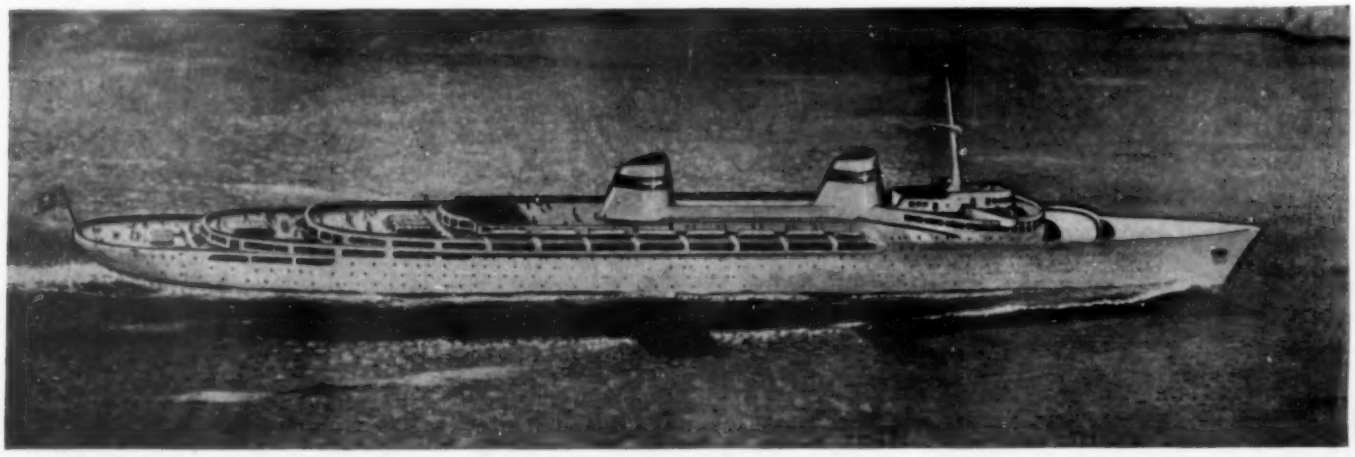
Vanillic acid esters, which recent tests have shown to be potent against molds and heat-resistant bacteria, may become substitutes for sodium benzoate as preservatives for fresh fruit juices, cheese spreads and bread.



STREAMLINED—Long, sleek and narrow, new luxury liners are planned by the U. S. Maritime Commission. They will be speedy enough to go from the West Coast to Tokyo in eight days.

PSYCHIATRY

Preventing Mental Breaks

Relieving stress factors, a system designed to lessen psychiatric casualties in the war, would contribute to the mental health of industrial workers.

➤ ARMY EXPERIENCE with mental breakdowns, which it is now revealed occurred at a high rate during the fighting in North Africa and Italy, may help prevent similar breakdowns in the civilian population, Dr. John W. Appel and Dr. Gilbert W. Beebe of Philadelphia, both former Army officers, report in the *Journal of the American Medical Association* (Aug. 31).

Find the cause of unbearable stress in a situation that can be changed and change it, is the essence of the Army findings that would help civilian mental health.

Their report "was without doubt one of the most important psychiatric documents in this war," Brig. Gen. William C. Menninger, director of the neuropsychiatry consultants division, Office of the Surgeon General, states in a note prefacing it.

The Army Chief of Staff personally sent copies of the original report to Gen. Eisenhower in Europe, to Gen. Mark Clark commanding the Fifth Army in Italy, and to Gen. MacArthur in the Pacific. Gen. Eisenhower in turn had it reproduced and distributed to the headquarters of each army, division and regiment in the European theater. It was similarly widely circulated in the Pacific theater, sometimes as "required reading" for every line and medical officer of the units.

Some of its recommendations, particularly for relieving infantrymen after a set period of combat duty, were carried out in the European theater. This was adopted as official policy by the War Department in Washington in March, 1945. Prior to V-J day plans were made for its application in the final campaign against Japan. An aggregate of 120 combat days was suggested as the limit of the period of combat duty for infantrymen, after which they were to be returned to the United States for 30 days rest and recuperation with the option of base area jobs on their return.

The basis of this recommendation and others for short-term rotation to afford a few days rest for men in forward areas, for improving morale by constant reassurance from commanders on why the men must continue to fight, and for sending replacements in small units rather than singly, came from Dr. Appel's findings at an "exhaustion center" in Italy, at casualty clearing stations and during brief experience with infantry troops during combat.

Neuropsychiatric casualty rates ran as high as 1,200 to 1,500 per 1,000 strength per year for short periods in the North African theater.

"Psychiatric casualties are as inevitable as gunshot and shrapnel wounds in warfare," Dr. Appel and Dr. Beebe declare. It is a simple fact, they explain, that "the danger of being killed or maimed imposes a strain so great that it causes men to break down."

The measures advised for preventing the loss of manpower due to psychiatric casualties were largely changes in the infantryman's environment. Knowing that he would be relieved from combat at a set time, instead of having to go on until he was injured, killed or broke mentally, made it possible for him to fight on until that time came. Rest, food, clothing, promotions, luxury articles and the like were other items of the soldier's environment important to his mental health which could be planned or arranged to help prevent breakdown.

Wages, hours, working conditions, priority rights, promotion systems, selection procedures and incentive systems similarly have a bearing on the mental health of industrial workers, the former Army officers point out. Changes in these can be made to contribute to the mental health of the population. The success of such undertakings depends on finding the stress factors that are important causes of psychiatric disorders in the population and that can be changed.

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FOOD TECHNOLOGY

Meat "Floats Through Air" In Dehydrating Process

➤ MEAT HAS always been a difficult problem in the relatively new food dehydration industry, primarily because those portions that come into contact with the metal trays or wire drums of conventional drying units are likely to be "overdone." To obviate this difficulty, William A. Noel, a U. S. Department of Agriculture engineer, has invented a meat-dehydrating machine in which the particles of ground meat are blown upward in a blast of hot air and kept dancing about in contact with nothing solid at all until the drying process is complete.

Fat, tried out in liquid form during the process, finds its way into a collecting duct at the bottom and is saved separately. When the lean part of the meat is well dehydrated, it is blown into a cyclone separator, where it is whirled down to the bottom and drawn off for packing.

U. S. patent 2,406,395, issued on this machine, has been assigned to the government.

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BIOCHEMISTRY

Levulose, Fruit Sugar, Will Aid Research

➤ A PILOT plant in Boulder, Colo., is producing a sugar of high sweetness that won't help the rationing situation but may reveal secrets of the human body's processes. The sugar, levulose, or fructose or fruit sugar, will be available for the first time in sufficient quantities for experimental work by scientists, Dr. Carl W. Borgmann of the University of Colorado Engineering Experiment Station reported.

A simple natural sugar with potential uses in food industries, levulose is known to be important in the human body starting in early life. Scientists have previously been handicapped by lack of this sugar in research experiments.

Operated on a grant from the Sugar Research Foundation, the pilot plant here uses an ion exchange process to obtain levulose from common sugar or beet molasses.

Dr. Borgmann said that studies are now being carried on at the Michael Reese Hospital, Chicago, to find out more about the storage of levulose in the body, its use by various organs and its effect on blood lactic acid, while Dr. I. M. Rabinowitch of the Montreal General Hospital is studying the rate of absorption of levulose in the body.

Levulose with radioactive carbon 14 may be used in future studies to follow the course of the sugar through the various body organs.

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MEDICINE

Use of Mineral Oil Has Health Repercussions

➤ THE OIL and fat shortage is having health repercussions.

In New York State numerous cases of stomach and intestinal upsets have been occurring. Health authorities ascribe them to mineral oil used as a substitute for edible oils in salad dressings.

In California patients have rushed to their doctors with frightening and embarrassing symptoms which were traced to mineral oil used in salad dressing and Italian spaghetti.

Use of mineral oil in salad dressings has now been prohibited in New York State. The U. S. Food and Drug Administration considers mineral oil salad dressings as adulterated under any form of labelling. The American Medical Association repeats its warning that taking mineral oil can seriously interfere with the absorption of carotene from which the body makes vitamin A, and of vitamin D, calcium, phosphorus and vitamin K, and that it should be used only under the supervision of a physician.

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MYTHOLOGY

Ancient Egyptian Queen Was Early Isolationist

➤ A NEW concept of Daluka, a great virgin queen of ancient Egypt, who built a wall around her country to become one of the world's first known isolationists, is presented in a study by Dr. Henry Lutz, professor of Egyptology and Assyriology at the University of California.

Queen Daluka probably was a goddess of the ancient Egyptians who through the evolution of myths was reduced to the level of humanity, Dr. Lutz points out. She ruled, according to Arab myths, 1,600 years before Christ, assuming royal power at 160 years of age and ruling for 20 years.

Daluka, the myths add, was elected queen by the women of Egypt after the flower of that nation's manhood was destroyed when the Red Sea engulfed Pharoah and his hosts while they were pursuing the Jews.

"Queen Daluka is described as a woman gifted with intelligence, knowledge, and experience," Dr. Lutz says in a monograph just printed by the University of California Press. "In order to safeguard Egypt against foreign attack, she fortified the country by constructing a wall which encompassed the whole land, made a fosse (moat), set up bridges and ballistas (ancient engines for hurling missiles), and placed guards and weapons at an interval of every three miles. Additional protection was furnished by means of magic, for which she had recourse to an old sorceress named Tadurah."

Dr. Lutz says that Daluka's policy of isolating Egypt from the rest of the nations was felt for almost four hundred years. She never married, and there is no mention in available records of her death.

Her virgin status and factors in the myths about her strongly indicate Daluka may be identified originally as Neith, the great goddess of Sais and the western Delta regions of Egypt, Dr. Lutz says.

Dr. Lutz adds that his study is intended not to elaborate the myths as fact, but to evaluate them as mirrors of historical actuality.

Science News Letter, September 7, 1946

CHEMISTRY

DPE Kills Mosquito Larvae But Not Fish

➤ A CHEMICAL relative of DDT which will kill mosquito larvae without harming fish has been found by Prof. W. T. Sumerford and Dr. Eugene P. Odum of the University of Georgia.

DPE is the name Prof. Sumerford gave the compound in his report to the American Pharmaceutical Association in Pittsburgh. It takes 100 times as much of the compound to kill goldfish, and 10 times as much to kill top minnows, as to kill mosquito larvae, he found.

Fisheries men and conservationists may be relieved of their worry about destruction of fish as a result of DDT sprays and dusts distributed over inland water to kill mosquitoes, since the new DPE might be used instead. Suburbanites may also be able to keep their ornamental goldfish ponds without creating a mosquito nuisance or menace.

DPE is DDT minus some of its chlorine. In previous attempts to find a chemical that would be less deadly to fish and still able to kill insects, the Georgia scientists tried substituting fluorine and iodine for the chlorine, but the resulting compounds were even more deadly to fish. The DDT minus some chlorine was first reported by A. Baeyer in 1872.

Science News Letter, September 7, 1946

IN SCIEN

ASTRONOMY

Faint Comet Never Entirely Disappears

➤ A FAINT comet that never entirely disappears has been located in its wanderings across the heavens.

For years the Schwassmann-Wachmann comet, discovered in 1925, has been thought the one that could be seen throughout its entire course around the sun. Now comet Oterma, discovered just three years ago, has been found to be another that is eternally with us.

Comet Oterma was recorded by Dr. G. Van Biesbroeck of the Yerkes Observatory of the University of Chicago on plates made with the 82-inch reflecting telescope of McDonald Observatory of the University of Texas. Although almost a 19th magnitude object, so faint it can be picked up only with the largest telescopes, the comet was within a month of being at its most distant point from the sun, states Dr. Otto Struve of the Yerkes and McDonald Observatories.

Science News Letter, September 7, 1946

BACTERIOLOGY

Food Germs Withstand Penicillin, Streptomycin

➤ HOPE THAT penicillin or streptomycin might be used to keep milk and other foods from spoiling by overcoming the germs that cause food spoilage dwindles with latest findings.

Streptomycin in ordinary concentrations has very limited activity against bacterial spores such as might cause food spoilage, Harold R. Curran and Fred R. Evans, of the U. S. Department of Agriculture, report in the *Journal of Bacteriology* (July).

Penicillin, they also conclude, "has no application in the preservation of food," though in combination with mild heating it might be useful as a preservative or might help delay spoilage in certain nonfood materials.

Reason for penicillin's failure as food-preservative: the antibiotic can kill spores of a wide range of germs, but some spores are resistant to its action. If a very few of these were in the food, penicillin could not stop their spoiling it.

Science News Letter, September 7, 1946

NCE FIELDS

BALLISTICS

New Bomb for Planes Flying at Speed of Sound

➤ NEW BOMBS must be developed for speedy jet-propelled and rocket planes, the War Department announces. Existing bombs cannot be dropped accurately from planes traveling near the speed of sound.

This has been determined in the Army Ballistic Research laboratories at Aberdeen, Md., by tests in its supersonic wind tunnel and in its free-flight aero-dynamic range.

Just what shape and size will make bombs of the supersonic era effective will depend upon results of studies now in progress, Army officials state. The bombs themselves must be able to fall considerably faster than the present type, have less wind resistance and be more sensitive. One scientist says that they may be of the "Buck Rogers" type.

Science News Letter, September 7, 1946

PSYCHOLOGY

Roosevelt Top Man in History, Says German Youth

➤ GERMAN youth have voted Franklin D. Roosevelt "the greatest man in world history," a poll reported by an American psychologist revealed.

The German young people, 14 to 18 years old, ranked FDR above Bismarck and Frederick the Great, with Hitler a poor fourth.

Asked the same question, American high school-agers put the late World War II president at the top of their list with Lincoln second, and Christ third.

Psychologist Donald V. McGranahan, of Harvard University, conducted the anonymous poll of German youths while in Germany and reports his findings in the *Journal of Abnormal and Social Psychology*.

Showing a marked preference for political and military leaders, the Germans even ranked President Truman in a tie for seventh place with Charlemagne. The 391 German youths in Friedberg and Offenbach voted as follows for history's leading men:

Roosevelt, 63; Bismarck, 50; Frederick the Great, 49; Hitler, 19; Eisenhower, 14; Stalin, 14; Charlemagne, 8; Truman, 8; Caesar, 6; Alexander the Great, 3; and Napoleon, 3.

The 986 American high schoolers from various sections of the country listed their heroes this way:

Roosevelt, 336; Lincoln, 227; Christ, 157; Washington, 98; Columbus, 24; MacArthur, 23; Edison, 23; Caesar, 18; Benjamin Franklin, 12; and Eisenhower, 11.

Outside the top heroes, American votes ranged from Mark Twain to "atomic bomb discoverer," while the Germans included the Pope, Goethe, and Churchill.

Summing up the preferences listed by the German youth compared with the American choices, Mr. McGranahan said, "In psycho-analytic terms, the German seeks to be a father and a son, but not a brother."

Science News Letter, September 7, 1946

PHYSICS

Two New Secrets About Atomic Bombs

➤ TWO MORE bits of information about the atomic bomb have been allowed to escape from behind the "iron curtain" of atomic energy secrecy.

The size of the critical mass of the atomic bomb, that is, the size that the active plutonium must be before it will go off explosively, is now known to be between 22 and 66 pounds. This has been stated in a British report.

Previously the limits were between 4.4 pounds and 220 pounds as stated in the famous Smyth report issued in August, 1945, by the War Department.

The new minimum size of the bomb confirms the idea that not very much of the fissionable element is needed to make a bomb. The actual bomb may, of course, be much larger than the minimum amount necessary.

The other information is this:

Another chain-reacting substance, probably an element, other than plutonium, can be manufactured. It can be made through use of uranium and thorium, but uranium is necessary to start with. This is the reason that the State Department's report on international control of atomic energy proposed putting thorium as well as uranium under atomic control. The 235 isotope of uranium and the element plutonium manufactured from uranium are the only two elements that it has hitherto been known could be made into atomic bombs.

Science News Letter, September 7, 1946

ICHTHYOLOGY

"Twilight Sleep" Given To Spawning Trout

➤ "TWILIGHT SLEEP" for fish makes it easy for spawn takers to extract the eggs. The fish are put to sleep by ether instead of morphine and scopolamine used for humans.

In an attempt to improve artificially upon nature's spawning methods, trout are ordinarily netted or trapped en route to their ancestral spawning grounds and retained until "ripe" for spawn extraction. This is done by experts who must manhandle the squirming trout in their attempt to extrude ripe eggs and milt. Because of their microscopic scales and heavy mucous covering, trout in particular have been the bane of the spawn-extractors' existence.

Like old-fashion human child-birth, artificial spawning of trout seems destined for revolutionary changes. At the Henrietta hatchery in Michigan, workers experimented with anesthetizing trout by pouring ether into the water. Results were so spectacular that spawn-takers are now enthusiastic boosters of "twilight sleep" for expectant trout.

In one experiment, almost a million eggs were stripped from etherized trout in half the time usually required. In addition, the percentage of "delivered" eggs that eyed up—denoting fertility and normal generation—nearly doubled.

Science News Letter, September 7, 1946

CHEMISTRY

Bakers' Cheese Made From Dried Skim Milk

➤ CHEESE for pies, cakes and other soft pastries can be made from dried skim milk by a process developed by dairy experts of the U. S. Department of Agriculture. This method enables bakers to make cheese from the relatively non-perishable dried skim milk as need arises.

The dried milk is reconstituted with a quantity of water, producing a milk higher in solids than normal milk. A good lactic starter and a small amount of rennet are added. Then the reconstituted milk is allowed to coagulate for 4 to 16 hours, depending on the temperature. When firm, the curd is placed in muslin bags and allowed to stand until most of the whey has drained off. It is then ready to be used.

Science News Letter, September 7, 1946

BOTANY

Weed Gives Botany Lessons

Flower of Datura, or jimsonweed, is classic material in study of genetics, and especially in understanding of mechanics of pollination.

By DR. FRANK THONE

➤ WEEDS CAN be useful. Even so unpromising a plant as jimsonweed, coarse, rank-smelling and poisonous though it is, proves as good as a lily and better than a rose when it comes to teaching the basic facts about plant life.

It is better for this purpose than most of the more seemly and conventional flowers in one quite important respect; its blossoming season is much longer. It opens up its first big white flowers (which are really attractive-looking until you get within smelling range) early in the summer and keeps right on opening more of them until decisive autumn frosts make it stop. It is therefore available practically throughout the summer-camp season, and remains so for a month or more after the opening of the regular school term. Jimsonweed therefore is one of our real nature-study resources, if we can only bring ourselves to overlook its rather bad company manners.

Aids Genetics Study

Jimsonweed has not gone wholly unappreciated. One of this country's leading geneticists, Prof. A. F. Blakeslee, used many species of the genus Datura (which is botanists' Latin for jimsonweed) in demonstrating how heredity works in plants. He had, at the Carnegie Institution's Station for Experimental Evolution at Cold Spring Harbor, Long Island, a great array of greenhouses in which he grew practically nothing but hundreds of thousands of hybrid jimsonweeds of all sizes and shapes; and outdoors in a good-sized field there were hundreds of thousands more. Now, at Smith College, he is still carrying on some phases of this work.

Along with him worked other botanists. One of them, Prof. John T. Buchholz of the University of Illinois who worked at Cold Spring Harbor during the summer months, made some very striking demonstrations of how pollen grains act in producing fertile seed, and what may go wrong sometimes when the pollen of one species is unable to fertilize the flower of a different species to form a hybrid.

The jimsonweed's flower is especially suitable for experimental work of this kind because it is big and relatively simple in structure, so that its parts can be taken out and handled relatively easily. That is an important matter when hundreds, even thousands, of dissections and microscopic examinations must be made as rapidly as possible.

By the same token, the jimsonweed's big, simply-built flower is well adapted for the less exacting, non-microscopic research of those who are not professional botanists.

The first thing we notice about it is its wide-flaring, trumpet-shaped corolla. There are no separate petals as in many common flowers; yet we can see where the lines of division might once have been, along the creases halfway between the projecting little points around the rim. This conspicuous structure, white, sometimes purple-marked, is the plant's advertisement to bee and long-tongued moth: "Nectar on tap here." For some reason, these insects are not repelled by the plant's ill scent.

The lure of promised nectar, of course, is the plant's promise of a fee for the transfer of pollen from one flower to another, so that crossbreeding may result, rather than debilitating inbreeding. Bees aren't always satisfied with nectar in payment, and take a load of pollen along to the hive instead, if there is need for more protein there instead of carbohydate. (Pollen grains are bees' soybeans.) It doesn't bother the flower to be robbed of part of its pollen—there's always a surplus of that.

NECTAR ON TAP — Wide-open white flower of the jimsonweed (Datura) is an invitation to bees and other insects to take its pollen and nectar. It provides an excellent natural means of studying the basic facts about plant life.

In making its collection, whether of nectar or pollen, the visiting insect is very likely to brush its pollen-dusted body against the sticky tip of the pistil, in the base of which the seeds will be formed. This sticky tip, called the stigma by botanists, is in some flowers borne on a long, slender, rod-like structure known as the style. The style is especially well-developed in the jimsonweed flower.

Not the Whole Story

It is at this point, with the pollen grains on the stigma, that first lessons in nature study usually stop. But it is really only the beginning. There is no magic influence, telegraphed down the style to the unfertilized egg-cells below, commanding them to go ahead now and form seeds.

The egg-cell is in a way only half a cell. The nucleus it contains has only half the heredity-bearing chromosomes necessary for the development of a normal plant; the other half are in a nucleus up there in the pollen grain, and the two must be brought together and fused into one cell before the seed can begin to develop.

The process, though too microscopically fine to watch with the unaided eye, is a fascinating one. Each pollen grain left on the stigma germinates almost as if it were itself a seed. What emerges might almost be mistaken for an extremely slender root—a thin-walled filament of living material that grows down through the soft tissue inside the style as a root grows down through the soil. Dozens of these filaments (they're called pollen tubes) find their way down the length of the style toward the egg-cells at its base. A powerful chemical attraction spurs them on.

While the pollen tube is growing, the fertilizing nucleus lags somewhat behind its tip. But when growth is finished, near the unfertilized egg cell, the nucleus moves forward, finds its way to

POLLINATION—Bumblebee is taking pollen from the stamens of a Datura, in this closeup photograph by Lynwood M. Chace. Nature's purpose is accomplished by the bee carrying pollen from one flower to another.

its mate, and the two fuse into one.

Immediately this cell divides again, and the two resultant cells do likewise, and so on for thousands upon thousands of divisions, with changes in arrangement and structure that finally produce the seed.

The process just described may be called the normal one. It is what has to happen for every fertile seed produced by ordinary pollination. There are, however, departures from the normal, which may frustrate the whole procedure, especially when efforts are being made by plant breeders to use strange pollen for the production of hybrids. Some of these troubles were traced to their causes by the researches of Prof. Buchholz.

One common cause of failure is the failure of the pollen tube to grow long enough. Either through weakness on its own part or because of chemical hostility encountered in the tissues of the style, a tube may stop growing. If it does, of course its usefulness is at any end. One way of evading this difficulty is by cutting off part of the style and letting the pollen-tube get started that much closer to its goal. This is a hint that practical plant breeders have found useful with plants more valued than jimsonweeds.

Another source of trouble, and one much more difficult to get around, is a more marked chemical incompatibility between pollen-tube and style tissue which results in the bursting of the pollen-tube and the loss of the fertilizing nucleus. This seems to call for a chemical reconditioning of the stylar tissue—something much more easily talked about than done.

At last, once the pollen-tubes have accomplished thier mission and the new crop of seeds is assured, there is no further need for the outer flower structures. The style withers and drops off, the flaunting corolla fades and is discarded. Down in their nursery at the base of the pistil the young seeds will grow and slowly ripen, until autumn opens the pod and the winds shake them out—to repeat the cycle another year.

Science News Letter, September 7, 1946

AERONAUTICS

Jet Future for Aircraft

➤ JET POWER for all future American high-performance aircraft was predicted with the announcement that the Army Air Forces has given the green light to General Electric's Aircraft Gas Turbine Division to manufacture all present designs of jets and speed development of new and more powerful designs.

R. G. Standerwick, chief engineer for General Electric, forecasts that high-speed gas turbines may largely replace conventional airplane engines "in the next 10 years."

He predicted that jet engines propelling commercial planes at 500 to 600 miles per hour will be forthcoming, and for the future jet-propelled aircraft may speed at 1,500 miles per hour to altitudes as high as 15 miles with engines of as great as 10,000 horsepower.

Pointing out that the speed danger zone lies between 600 and 740 miles per hour, the jet engineer declared that an intensive program is underway by government and industry to send speeds above that of sound.

Although gas turbines require oxygen to operate, Mr. Standerwick said altitudes of 60,000 to 80,000 feet, where there is still some oxygen, might be reached.

Once jet speeds have broken through the wall of sound's speed, he pointed out, ram jet, the "flying stovepipe," might replace gas turbines.

"Then," he concluded, "if we are to fly higher and faster, we will depend upon rocket planes, which will break through the earth's atmosphere—100 miles up—at speeds between 3,000 and 4,000 miles an hour, which are not physiologically unreasonable."

Science News Letter, September 7, 1946

WILDLIFE

Lovely Trumpeter Swan Saved from Extinction

➤ THE TRUMPETER swan, largest migratory waterfowl of North America, has probably been saved from extinction.

Only 73 of these magnificent birds remained in the United States in 1935. Today at least 301 of these swans are to be found in this country, it was discovered through a survey conducted by the U. S. Fish and Wildlife Service, active in their restoration.

Science News Letter, September 7, 1946

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Cellulose ethers were used as soap substitutes in Germany to save edible fats.

Poultry *mites,* unaffected by DDT, are destroyed by the British Gammexane.

Radishes, water cress, mustard, wallflowers, stock, and mignonette are closely related.

This year's total *hosiery production* is supposed to yield 10 pairs of stockings to each woman.

Today farmers use ten times as much *nitrogen fertilizer* as they did at the beginning of the century.

Food proteins are decomposed in the human digestive tract into their constituent amino acids.

Lack of *fertilizers,* fuel and transportation facilities, also drought, caused the sharp decrease in last season's sugar output from Europe.

The highly skilled business of producing *cauliflower* seed, long considered a European secret, was mastered by American growers during the war.

A *rectifier* that changes alternating current into direct current equally well in very hot and very cold weather has been developed for use on planes and ships.

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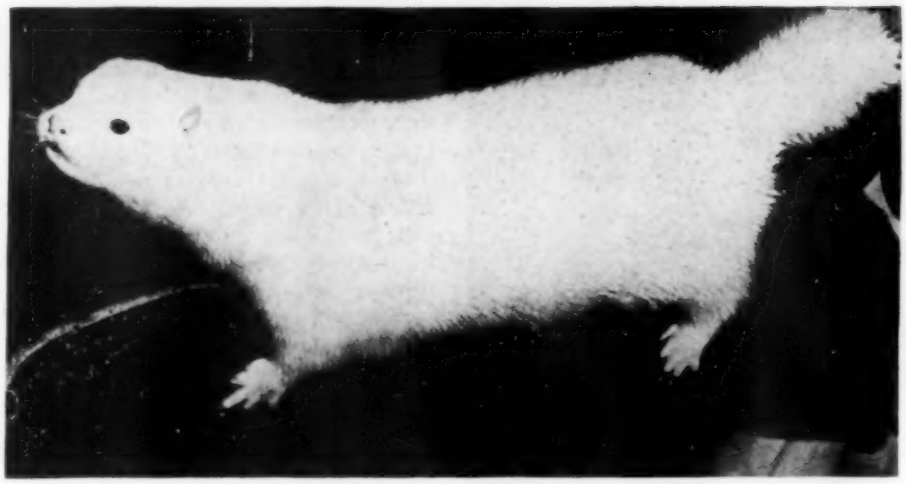

SNOW WHITE—The mink in the picture has natural colored eyes and "not over 12 dark hairs."

GENETICS

Mink Whiter Than Albino

➤ BREEDERS of mink have improved on nature. They are making many kinds that nature never heard of before. One is a mink whiter than any albino mink. Another is bluish in color. A third has a purplish tint.

Early breeders of mink sought to get a fur like that of the best skins of the trappers, dark in color. Today mink breeders develop animals with fur of fine texture, but of an exotic shade.

As mink began to be reared in captivity, individual freak animals appeared. Observing breeders, gifted with curiosity, bred them to their near relatives to see what kind of animal would result. Thus originated mutant varieties, mostly lighter in color than the original wild type, state Prof. W. E. Castle of the University of California at Berkeley and Larry Moore, mutation mink breeder, Suamico, Wis.

The fur of the albino mink, with its typical pink eyes, is not a clear white all over the body, as in the case of the ordinary white rabbit. Resembling the albino guinea pig, it usually has a bit of dark coloring at the tip of the tail and on the nose. Some of the original albino minks had coarse fur, but this was overcome by crossbreeding with colored mink of finer fur.

The coat of the Pastel mink, when in full prime, has a slightly purplish tint. In this fur all dark spots that would normally be black in the wild type of coat are brown instead.

Siverblu is the name adopted for one of the most valued and beautiful of the freak varieties. It is much lighter in shade than wild mink, and both its guard hairs and underfur are bluish in color. Imperial Platinum, another mutation similar in appearance to Silverblu, is distinct in origin and follows different rules of heredity.

The fur of a type known as Koh-i-nur is practically all white, but a dark stripe runs along the middle of the back and a transverse bar of dark hair crosses the shoulders.

Descendants of the Koh-i-nur, receiving the same heredity from both parents, may have only a narrow stripe, interrupted by bits of white. Or the stripe may disappear altogether, leaving dark spots only on the head and tail.

A white variety, but with naturally-colored eyes, may be created by crossing Koh-i-nur with Blufrost, also unique for the small amount of coloring in the coat. While some of the baby mink of such parents are normally dark, about a fourth of them will have a tiny stripe down the back, or none at all, with faint spots on the head and tail only.

If such a light mink is back-crossed to a Koh-i-nur, however, some mink of the next generation will be practically all white with "not over 12 dark hairs," Prof. Castle and Mr. Moore report in the *Journal of Heredity*. When dominant whites are mated to each other, only one-third of the young mink will have the black cross marking, while two-thirds, like their parents, will have only a few stray dark hairs.

PLANT PHYSIOLOGY

Growth without Roots

Tissue cultures have been used to produce fungi and viruses which cause diseases in plants. These studies hold high promise for crop plague fighters.

➤ FUNGI and viruses that cause disease in plants have been grown for experimental purposes on masses of plant tissue, which were themselves growing separately from the original plants, fed on a chemical solution, after the manner of the "immortal" chicken-tissue cultures made classic by the late Dr. Alexis Carrel.

This feat of plant physiology, which promises to be highly useful to fighters against crop plagues, was reported by Dr. R. J. Gautheret, eminent French plant scientist, before the Growth Symposium at Kingston, R. I. Dr. Gautheret, one of a small number of researchers in this country and abroad who pioneered the difficult business of getting plant tissue cultures to grow indefinitely, reported to his American colleagues on work which he and his associates had carried on in France despite the wartime blackout of most research.

They have been able to produce tissue cultures of a considerable number of plants, including both fleshy tissues like carrot, endive, Jerusalem artichoke and tobacco stem, and woody stems like those of willow, grapevine and Virginia creeper. Many of the cultures are as much as six years old and have been transplanted more than 20 times.

Plant tissue cultures, Dr. Gautheret remarked, do not need to be transplanted as frequently as animal tissue cultures. He showed one that had been allowed to grow for ten months without being divided and transplanted; it weighed more than five ounces.

These plant tissue cultures are neither stem, root nor leaf; they are "just plant." They resemble the callus that grows over healing wounds on trees, and consist of masses of almost undifferentiated cells.

In the nutrient solution which he supplied in his cultures, Dr. Gautheret included a growth-promoting substance, heteroauxin, in addition to the usual mineral salts, sugar, amino acids and vitamins. This produced rapid growth, but it also changed the appearance of the new tissue, giving it some resemblance to the abnormal growths provoked by bacteria that have been termed plant cancer. Dr. Philip R. White in this country has grown tissue cultures of plant cancers without using heteroauxin. After suggesting that these changes "may represent a sort of cancerization," Dr. Gautheret added the cautionary note: "The future will tell if this comparison is well-founded."

Science News Letter, September 7, 1946

INDUSTRIAL HYGIENE

No More "Mad Hatters"

➤ THE "MAD HATTER" has disappeared and there is no possibility of his reappearing in the United States, thanks to studies by industrial hygienists of the U. S. Public Health Service.

The hatter's proverbial madness, characterized by the "shakes" and mental disturbances, was due to mercury poisoning acquired on his job of hatmaking. John J. Bloomfield, assistant chief of the Industrial Hygiene Division of the federal health service, told how this hazard to workers' health was conquered when he appeared as guest of Watson Davis, director of Science Service, on Adventures in Science, radio program presented under the auspices of Science Service over the Columbia Broadcasting System.

Mercury was formerly used as a carroting agent to increase the felting properties of rabbit and other skins used for felt hats, he explained. Hat makers displayed mental and physical symptoms in proportion to the amount of mercury vapor to which they were exposed in a late stage of hatmaking. The poisoning affected 8% of the fur cutters and 12½% of the hat makers.

Better ventilation and housekeeping in hat manufacturing plants were recommended and installed. Then, some years later, a representative of the hatting industry came to the U. S. Public Health Service with the announcement that he had found a substitute for mercury as a carroting agent. As a result, industry, labor unions, the federal health service and the Commissioner of Health in Connecticut, which has a large number of fur cutting and hat manufacturing plants, got together and urged all states to forbid the use of the mercury carrot in fur cutting.

Every time a new product or device is introduced, from plastics to television, every time a new industry is developed or a change made in an industrial process, a new hazard to workers' health may be involved.

Industrial hygienists have developed the technique and the "know-how" to solve practically any problem presented to them, Mr. Bloomfield said. These health workers wish that they would be consulted when a change in industrial process or manufacture of a new product is in the planning stage, so they can advise how to avoid hazards to workers' health before the workers start on the job.

Science News Letter, September 7, 1946

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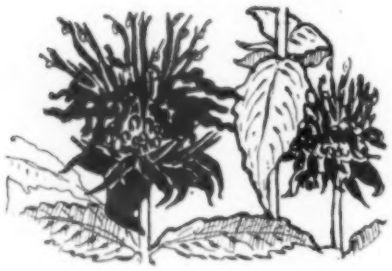
BOTANY

NATURE RAMBLINGS by Frank Thone



Neglected Treasures

➤ GARDEN enthusiasts will go to all kinds of trouble to induce rare and delicate native plants to grow under their care. It is really something to be able to boast of a good clump of moccasin flowers or a bed of dogtooth violets or a veil of maiden-hair fern over a moist rockery. Maybe we value things in proportion to the trouble they cause us. In any case, there seems little inclination to cultivate some of the stout and lusty flowers of late summer and early autumn, that anybody can grow. Only a few gardens can show goldenrods and wild asters, liatris and cardinal-flower.

Fewer still have members of the horsemint group, though these are perhaps the most easily grown of all. About all they require is to be pulled up by the roots, stuck in a hole and have dirt tramped on them. They do like good soil and reasonably abundant moisture, but like all late-summer flowers they can endure a considerable degree of drought.

Perhaps one reason why they have not been more generally accepted is the rather strong colors of their flowers. Oswego tea, otherwise known as bee balm, is about the most bumptious red-head you can find among flowers. It just doesn't match with anything. But it can be used very effectively if you have a mass of rather dark foliage that needs lighting up.

Similarly the wild bergamot is hard to fit into most orthodox garden color schemes. Its tousle-headed flowers are variously described as lilac and purple, but a closer characterization would be a blazing electric blue. Yet in the wild state, growing along roadsides or in field corners with goldenrod or wild senna or other yellow-flowered plants, it fits into the sunlit picture very harmoniously. Perhaps that would be the way to handle it in a garden: massed with yellow-flowered plants at an open vista's end.

The horsemints are true members of the mint family, all right; their leaves have something of that strong, aromatic odor that is associated with all mints. The "horse" part of the name is probably a reference to its strong, lusty growth; horses certainly do not go after them the way cats go after catnip.

This group of plants is as American as cornbread and baked beans. The only suggestion of foreignism is in their generic name, Monarda, which commemorates a sixteenth-century physician, Nicolas Monardes. However, Monardes was much interested in New World botany and wrote a good deal about American plants, so it is fair enough that he should have an American botanical monument in this plant name.

Science News Letter, September 7, 1946

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TEXTILES

"Azlon" Is Newest Protein Base Fiber

➤ ADD TO rayon and nylon, "azlon."

A conference called by the Federal Trade Commission has agreed that "azlon" will be the official name for protein base fibers used as a textile product in making garments.

Man-made, natural protein base fibers, or "azlon," are manufactured principally from casein of milk, soybeans and other sources of natural protein.

Science News Letter, September 7, 1946

INVENTION

Refrigerator with Two Temperatures for Homes

➤ A TWO-TEMPERATURE refrigerator, with ice-cube freezer in a compartment entirely separated from the food-cooling section, promises greater ease and efficiency in tomorrow's housekeeping. It is covered by U.S. patent 2,405,392, recently issued to Leonard W. Atchison of Schenectady, N. Y.

The freezing compartment, at the top of the cabinet, receives full benefit of the mechanical refrigeration. The food compartment below, which is to be kept at a somewhat higher temperature—40 or 45 degrees Fahrenheit—has its own cooling coil, which is filled with a mixture of oil and an easily evaporated refrigerant of the Freon type. Extensions of this coil into the upper compartment are connected with a condenser that functions as a heat exchanger. When the lower compartment tends to warm up, some of the refrigerant in its coil evaporates. The vapor rises into the heat exchanger, where it is condensed and recooled, flowing back into the food-cooling coil. The process is thus one of extreme simplicity and fool-proof efficiency.

Patent rights have been assigned to the General Electric Company.

Science News Letter, September 7, 1946

GEOPHYSICS

Sub-Surface Explosions Make Greater Havoc

➤ THE ATOM BOMB is a much more formidable weapon when exploded under water than it is when exploded in the air. This was made apparent by comparative motion pictures of Able and Baker tests shown before an audience of returned Bikini correspondents.

Much of the footage was taken by automatic cameras on towers on the atoll's islets and on ships in the target array. The rest was "shot" from planes flying as close to the scene of the explosions as the pilots dared.

Within seconds after the explosion burst violently through the lagoon's surface, a dense white mist had risen to many times masthead height and completely engulfed the ships. Charged as it was with radioactivity of deadly intensity, this mist was far worse than any poison gas used in Flanders during World War I. No protective clothing or gas mask could prevent its lethal

radiations from penetrating the flesh and bones of anyone on the decks.

At the same time, hundred-foot waves were started, that sent deluges of green water, also radioactive, washing over the ships. These waves subsided to a tenth of their height before they had traveled three miles, but in the meantime they did their mischief. And even before they struck, the wracking shock wave had sped through the water like an earthquake, ripping hull plates open and starting even the stoutest of warships towards the bottom.

But of all the effects of this triple-threat weapon, radioactivity is by far the worst, in the opinion of Vice Adm. W. H. P. Blandy, who met the correspondents in a press conference before the showing of the films. Terming the bomb a "most insidious weapon," he pointed out that its effects might be felt not only by its immediate victims but that its "untold harm" might extend into future generations.

Adm. Blandy reiterated his wish to see the atom bomb effectively outlawed, not by mere pious words of renunciation but with a ban backed up by effective international action. If we cannot get that, he said, he is in favor of keeping the weapon and continuing research on it.

Science News Letter, September 7, 1946

MEDICINE

Minibunnies Used To Test Injection Fluids

➤ A NEW RACE of minibunnies, known as "Polish" rabbits, are proving helpful in tests for the safety of solutions to be injected into patients' veins, Dr. Carl E. Georgi, of the University of Nebraska, reported.

The salt solution frequently given patients after operations, sugar solution given as nourishment for patients unable to eat, and perhaps even blood plasma are among those which might be tested with the bunnies' aid. Full-sized rabbits are now used in testing these solutions for materials that might cause fever in the patient.

The Polish rabbits are miniature animals bred from white New Zealand rabbits, Dr. Georgi explained. Those which cannot qualify for show purposes can be obtained from dealers. These animals, slightly larger than the show animals, weigh about two and one-half to three and one-half pounds.

They take half the space usually required to keep animals for such purposes and eat less, so that they can be left unattended over week-ends and holidays.

Another advantage is that less of the solution to be tested is needed, since the amount used is based on the weight of the test animal. With the usual large, well-fed laboratory animal this often becomes such a big dose it is difficult to give. The vein in the ear, used for injecting the test solution, is satisfactory; and it is easy, Dr. Georgi said, to get accustomed to the smaller-sized ear.

Science News Letter, September 7, 1946

Books of the Week

AIR AFFAIRS: An International Quarterly Journal—*Air Affairs, Inc.*, 130 p., subscription $5. per year. Vol. I, No. I.

APPLE QUALITY AND ITS EFFECT ON PRICE AND RATE OF SALE — G. E. Blanch — *Cornell University Agricultural Experiment Station*, 50 p., tables, paper, 5 cents. Bulletin 826.

APPLE-TREE PRUNING WOUNDS: Treatment and Healing in Sound and Winter-Injured Trees—D. S. Welch and L. H. MacDaniels—*Cornell University Agricultural Experiment Station*, 23 p., illus., paper, 5 cents. Bulletin 821.

FIRST DENVER CONGRESS ON AIR EDUCATION: Held at Denver, Colo., July 23 to 28, 1945. *University of Denver Press*, 139 p., $2.50.

FROM THE RESEARCH LABORATORY TO THE ARMED FORCES—*Mellon Institute of Industrial Research*, 32 p., paper, free. Talks by specialists in wartime research on medicine, synthetic rubber, radio, etc.

INVENTING FOR PROFIT: Louis Chayka—*Humphries*, 205 p., $2.50. This book is a fascinating revelation of those people who anxiously try their skill on improving all kinds of ideas. The chapters discuss the patent system, the requirements of the Patent Office, the ways to exploit inventions, and many allied subjects.

OFF TO A GOOD START: A Handbook for Modern Parents—Irma S. Black—*Harcourt*, 256 p., $2.50. A nontechnical book about the day-to-day problems which confront the parents of small children.

PLANNING PROGRAMS FOR VETERANS IN RURAL AREAS: Edwin R. Hoskins—*Cornell University Agricultural Experiment Station*, 57 p., tables, paper, 10 cents. Bulletin 825.

PRINCIPLES OF DYNAMIC PSYCHIATRY—Jules H. Masserman, M.D.—*Saunders*, 322 p., illus., $4. The book presents the fundamentals of dynamic psychology and clinical psychiatry briefly, clearly and systematically, and so prepares the student for clinical training in diagnoses and therapy through direct work with patients.

RESULTS TO DATE OF STUDIES OF THE DURABILITY OF NATIVE WOODS TREATED AND UNTREATED—C. N. Whitney—*Dept. of Agric., Northern Rocky Mountain Forest and Range Experiment Station*, 54 p., tables, paper, free. Station Paper No. 5.

SCIENTIFIC INSTRUMENTS — Herbert J. Cooper, ed.—*Chemical Publishing Co., Inc.*, 305 p., illus., $6. A discussion of a wide range of instruments designed for making physical measurements. Not only laboratory instruments but also those used in the field, in industry and commerce are covered.

THE SPECIES OF PLATYCOPIA SARS (COPEPODA CALANOIDA)—Mildred Stratton Wilson—*Smithsonian Institution*, 16 p., illus., paper, 15 cents. Smithsonian Miscellaneous Collections, Vol. 106, No. 9.

THE STORY OF THE THERMOMETER—Benjamin De Leon—*Science Learning Aids Pub. Co.*, 32 p., tables and illus., paper, 35 cents. Lessons in Science Series for School and Home Study No. I. A booklet suitable for the 9th grade science student, giving a picture of the kind of relationship that exists between the subject matter and those men who have developed it.

Science News Letter, September 7, 1946

RESOURCES

Rich Cattle Land Found in Colombia

➤ NATURE, assisted slightly by man in modern times, is creating in the interior of Colombia, S. A., a rich grassland comparable to the American great plains or the Argentine pampas, says Dr. R. A. Stirton, University of California paleontologist.

Dr. Stirton says that this area, called the llanos, Spanish for "great plain," covers more than half of Colombia, and is still expanding. The paleontologist has just returned from making a geological study of the eastern flank of the Andes along the edge of this great plain.

He says that evidently there is now under way a gradual geological uplifting of the llanos area; at the same time the inhabitants of the area are constantly burning off the grass on the plain, which also burns part of the bordering jungle. Dr. Stirton says these two factors help expand the plain.

The area awaits only transportation facilities, such as highways and railroads, for its development as a rich cattle range. Dr. Stirton reports the soil appears to be good, and, though the area is just north of the equator, the climate along the Andean foothills is excellent.

Science News Letter, September 7, 1946

Cotton's importance in American economy is indicated by the employment it provides; in 1939, about one-quarter of the total farm population of the United States grew cotton, and 500,000 persons worked in cotton textile making.

·New Machines And Gadgets·

⚙ *DEFROSTER for household refrigerators removes ice from the outside of the cooling unit without heating up the entire inside of the refrigerator. The device consists of a number of metallic plates overlying the walls of the cooling unit, with electrically insulated heating elements behind them.*

Science News Letter, September 7, 1946

⚙ *LIGHTWEIGHT cylinder for portable fire extinguishers using compressed carbon dioxide weighs slightly more than half as much as the older cylinder, and holds 25% more of the extinguisher. Its light weight and trigger control valve make it easy to handle.*

Science News Letter, September 7, 1946

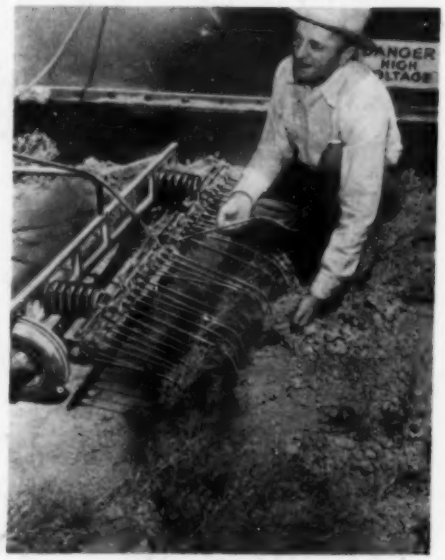
⚙ *DETONATION indicator, designed for use on all types of engines and aircraft, gives positive warning of improper combustion by detecting and evaluating detonation. It is a tiny device, an improvement on former indicators, easily installed, timed and maintained.*

Science News Letter, September 7, 1946

⚙ *HEAT-RETAINER and holder for a nursing bottle keeps liquids at a proper temperature and inclines the bottle at the proper angle for feeding. The cylindrical insulated container, into which the bottle fits, has its open end covered, when in use, by a breast cap through which the nipple projects.*

Science News Letter, September 7, 1946

⚙ *VEGETATION killer used 12,000 volts of electricity from a portable generator to electrocute weeds and deep-rooted perennials, without harming row-crops or the soil. The wires shown in the picture are copper electrodes for discharges at the base of foliage.*



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⚙ *ADJUSTABLE frame for photographs, by a system of springs and overlapping corners, can be pulled out or pushed in to suit any size of pictures from four by six to eight by ten inches. The frame, made of a plastic by an injection molding process, is of different colors.*

Science News Letter, September 7, 1946

⚙ *JET-POWERED speedboat, in England, will have a modified form of a jet engine such as is used in aircraft. Two will be installed in the same hull that, powered with conventional aircraft engines, skimmed over a water course at a rate of nearly 142 miles an hour.*

Science News Letter, September 7, 1946

⚙ *POT CLEANER is designed to replace steel wool, that is held with the fingers. Built on the principle of an egg-beater, different types of brushes can be attached.*

Science News Letter, September 7, 1946

⚙ *ODOR REMOVER, to pick up offensive smells emanating under bed covers from a patient's infected wounds, consists of a perforated canister containing activated carbon, placed close to the odor source. An electric fan draws the odor-laden air through the carbon, delivering purified air into the room.*

Science News Letter, September 7, 1946

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